Tatsuwo FURUKI* & Kohsaku YAMADA**: **The genus *Radula* (Hepaticae) of the Bonin and Volcano Islands*****

古木達郎*・山田耕作**: 小笠原諸島と硫黄列島のケビラゴケ属 (苔類)

The bryophytes of the Bonin and Volcano Islands were summarised and discussed by Inoue & Iwatsuki (1969, 1970a, 1970b, 1984) and Iwatsuki (1985). In July of 1985, the senior author made a field survey with Mr. S. Imura on Hahajima Island and Chichijima Island of the Bonin Islands. The present paper deals with the *Radula* species in the Furuki and Imura collection, and the collections made by the late Prof. Y. Horikawa on Minami-iwojima Island and Naka-iwojima Island of the Volcano Islands in 1936, which are preserved in the Hiroshima University (HIRO).

Key to the species of *Radula* on the Bonin and Volcano Islands

1. Leaf-lobes with acute apices.......................................*R. kojana*
1. Leaf-lobes with rounded apices 2
2. Gemmae present, occurring on margins of leaf-lobes..................... 3
2. Gemmae absent.. 4
3. Stem 5–10 mm long; the bases of leaf-lobules slightly covering the stem, the keels more or less decurrent; the cell-walls of leaf-lobes without trigones .... *R. boninensis*
3. Stem 10–20 mm long; the bases of leaf-lobules covering the stem for 1/3–1/2 of the stem-width, the keels not decurrent, the cell-walls of leaf-lobes with medium-sized trigones.....................................*R. constricta*
4. Leaf-lobules subrhombic, apices elongate, parallel with, or turning away from the stem ....*R. retroflexa*
4. Leaf-lobules subquadrate, apices not elongate, and not turning away from the stem 5

---

* Botanical Institute, Faculty of Science, Hiroshima University, Hiroshima 730. 広島大学 理学部植物学教室.

** [redacted] Ise-shi, Mie-ken 516; also the Hattori Botanical Laboratory, Miyazaki-ken 889-25. 伊勢市[redacted]

*** Contribution from the Phytotaxonomical and Geobotanical Laboratory, Hiroshima University, N. Ser. No. 326.

5. Leaf-lobes oblong-ovate, very fragile and caducous; leaf-lobules subquadrate to more or less subrhombic; keel spreading at angles of 50-60° with the stem .... *R. javanica*
5. Leaf-lobes ovate, not fragile and caducous; leaf-lobules quadrate; keel spreading at angles of ca 70° with the stem ....*R. japonica*

1) **Radula boninensis** Furuki et Yamada, sp. nov.

Planta parva, flavobrunnea; caulis irregulariter pinnatim ramosis, oblique patulis; lobi foliorum moderate vel laxe imbricati, concavi, ovati, apice obtuso, margine parum crenulato, gemmis marginalibus abundantibus, cellulis medianis tenuibus, trigonis et incrasstionibus intermediis nullis, cuticula laevi; lobuli sub-

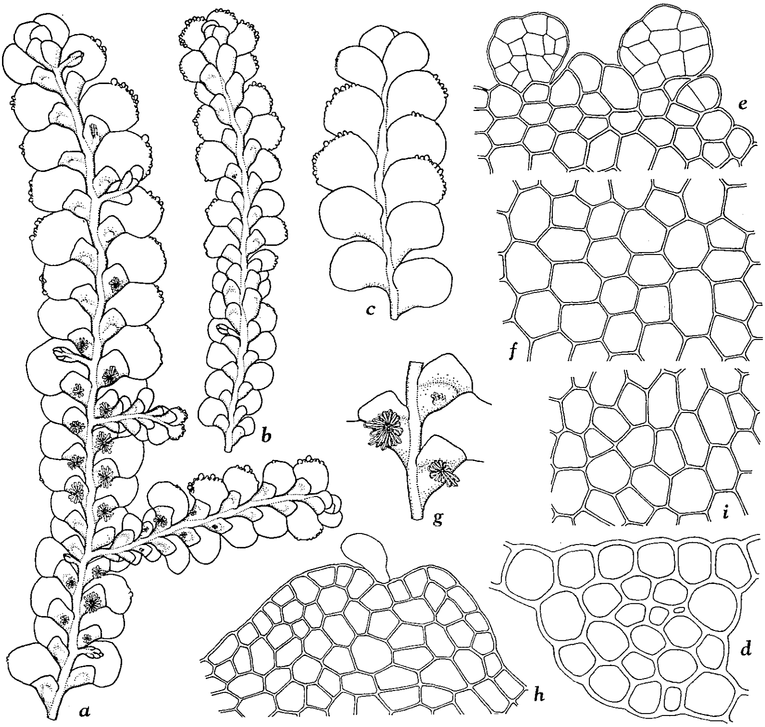

Fig. 1. *Radula boninensis* Furuki et Yamada. *a*. Portion of stem, ventral view, ×12. *b*. Portion of branch with androecia, ventral view, ×12. *c*. Apical portion of stem, dorsal view, ×12. *d*. Portion of cross-section of stem, ×400. *e*, *f*. Cells of leaf-lobes, *e* from margin (with two gemmae), *f* from middle, all ×400. *g*. Lobules of stem-leaves with rhizoids, ×20. *h*. Apical portion of leaf-lobule, ×400. *i*. Median cells of leaf-lobule, ×400. All drawn from the holotype.

quadrati vel subrhombici, apice anguste obtuso, basi caulem haud vel parum tegente, carina valde arcuata, sinu lato; dioica? (gynoecia haud visa), androecia in terminalia.

Plants small, yellow-brown in herb. Stem 5-10 mm long, 0.05-0.06 mm in diam., with leaves 0.9-1.5 mm wide, irregularly pinnately branched, branches obliquely spreading, 1-3 mm long, 0.05 mm in diam., with laeves 0.5-1.0 mm wide; stem 5-6 cells thick, cortical cells as large as medullary cells, both cells uniformly thick-walled, trigones absent. Leaf-lobes moderately to loosely imbricate, widely spreading, concave, ovate, (0.45-)0.6-0.8 mm long, 0.4-0.6 mm wide, apices obtuse, margins slightly crenulate, dorsal bases arched, usually slightly extending beyond the farther edge of stem, not auriculate at base; numerous gemmae discoid, occurring on margins of leaf-lobes; marginal cells 8-15×8-12 μm, median cells 10-20×10-15 μm, basal cells (13-) 22-30×13-23 μm, walls thin, trigones absent; leaf-lobules variable in shape, subquadrate to subrhombic, ca 1/2 of the lobe-length, 0.15-0.35 mm long, 0.15-0.3 mm wide, apices narrowly obtuse (or rarely subacute), both adaxial and abaxial margins weakly arched, bases not or slightly covering the stem, carinal region inflated; rhizoid-initial area convex, rhizoids in a bundle, pale brown; keel spreading at angles of ca 70° with the stem, 0.2-0.3 mm long, substraight or slightly arched, more or less decurrent, the sinus wide. Dioicous? (gynoecia not seen). Androecia terminal (or rarely intermediate) on stem, with 2-4 pairs of bracts.

Type: Hahajima: Sekimon area, 250-300 m, on limestone, July 16, 1985, coll. T. Furuki & S. Imura 5988—holotype (HIRO), isotypes (NICH, TNS).

The diagnostic characters of this species are 1) the small yellow-brown plants, 2) the numerous, discoid marginal gemmae of leaf-lobes, 3) the subquadrate to subrhombic leaf-lobules not or slightly covering the stem, and 4) the leaf-lobules with more or less decurrent keels.

This species is closely related to *Radula gedena* Gott. from tropical Asia, but the latter is distinguished from this new species by the pronounced mammilliform rhizoid-initial area on the inflated carinal regions of leaf-lobules, and the cells of leaf-lobes which are very irregular in shape and size.

2) **Radula constricta** Steph. Hahajima: Sekimon, on limestone, T. Furuki & S. Imura 5983, 5989.

3) **Radula japonica** Gott. ex Steph. This species was reported from Hahajima Island by Inoue & Iwatsuki (1970b).

4) **Radula javanica** Gott. Minami-iwojima: coastal cliff, Y. Horikawa 15154; summit area, Y. Horikawa 15189; at the breast, Y. Horikawa 15207. Naka-iwojima: Mt. Paipu, Y. Horikawa 15233.

This species was reported from Minami-iwojima Island by Inoue & Iwatsuki (1984), and seems to be common there. *R. javanica* in Minami-iwojima has caducous and/or very fragile leaves.

5) **Radula kojana** Steph. Chichijima: Mt. Chuo, ca 230 m, on rocks, T. Furuki & S. Imura 5669, 5965. Minami-iwojima: summit area, Y. Horikawa 15185.

6) **Radula retroflexa** Tayl. Minami-iwojima: summit area, Y. Horikawa 15159. Inoue & Iwatsuki (1984) already recorded this species from Minami-iwojima Island.

The *Radula* flora on the Bonin and Volcano Islands is similar to that of the Ryukyu Archipelago (including the Yaeyama Islands) which was reported by Yamaguchi (1985). Among six species, *R. boninensis* is endemic to Hahajima, *R. javanica* and *R. retroflexa* are distributed widely in tropical or subtropical regions of Asia and the Pacific. *R. kojana*, *R. constricta*, and *R. japonica* are distributed in China and Japan.

The senior author thanks to Prof. Z. Iwatsuki of Hiroshima University for his valuable advice and encouragement for this study. Thanks are also due to Mr. S. Imura of Hiroshima University who helped him during the field survey, and to Dr. S. Hattori of the Hattori Botanical Laboratory for his critical advice. We also wish to thank Dr. A. J. Sharp of the University of Tennessee for his kind help with the English of this article.

Literature cited

Inoue, H. & Z. Iwatsuki 1969. Bryophytes of the Bonin Islands and the Volcano Islands (1). Bull. Natn. Sci. Mus. Tokyo **12**: 291-309. —— & —— 1970a. —— (2). J. Hattori Bot. Lab. **33**: 381-389. —— & —— 1970b. —— (3). Bull. Natn. Sci. Mus. Tokyo **13**: 475-489. —— & —— 1984. —— (4). Bull. Natn. Sci. Mus. Tokyo, ser. b, **10**: 102-106. Iwatsuki, Z. 1985. —— (5). Ibid. **11**: 57-68. Yamaguchi, T. 1985. Bryophyte flora of the Yaeyama Islands, Japan. Hikobia **9**: 243-264.

* * * *

筆者の一人である古木による小笠原諸島産の採集品と，広島大学にある堀川芳雄博士採集による中および南硫黄島産のケビラゴケ属を調べ，6種を見出した。その内の1新種（オガサワラケビラゴケ，新称）は，東南アジアに分布する *Radula gedena* Gott. に類似するが，後者は葉下片の仮根基部がいちじるしく乳房状に突出すること，葉上片の細胞の大きさと形がきわめて不揃いであることで識別できる。6種の内，新種は母島の固有種である。*R. retroflexa* と *R. javanica* は東南アジアから太平洋諸島の広い地域に分布圏をもち，残りの3種は，中国から日本に分布する。小笠原諸島の *Radula* フロラは琉球列島のそれによく似ている。

□中国科学院登山科学考察队（編）：**天山托木尔峰地区的生物** 353 pp. 1985. 新疆人民出版社，乌鲁木齐市. 5.00元. 中国科学院登山科学考察队が1977-78年に実施した，天山山脈の最高峰である托木尔峰（7435.3 m）の調査報告である。哺乳類，鳥類，昆虫が前半の165頁までに，高等植物（苔類1種，蘚類27種，羊歯類8種を含む），真菌類，地衣類が後半に収められている。それぞれの生物群については，分布に関する考察があり，目録がこれに続いている。地衣類について云えば，この地区に特徴的な種，たとえば *Acarospora gobiensis* や *Anaptychia ulothricoides* のようなものが，もう少し多くてもよいように思われる。　（黒川　逍）

□「熊本の野草」編集委員会：**熊本の野草〈下〉夏～秋編** 308 pp. 1986. 熊本日日新聞社，熊本. ¥2,800. さきに紹介した上巻に続くもので，同様なスタイルである。巻末に上下巻にわたる和名の索引がある。本書は初心者の利用を目的としているようで，植物名には学名が示されていない。より高度の利用のためには参考書が挙げてあるので，これらによることを期待しているためであろう。これも一つの行き方であるし，私も最近までその方が実際的であると考えていた。ところが環境庁の「身近な生きもの調査」で，対象植物を和名のみで指定し，学名を示さなかった結果，どういう植物が報告されたのか全くわからなくなってしまい，調査が無意味になったという事例がおこったので，あらためて学名の役割の重大さを認識した。とくに最近では一般参加による環境調査報告が学術的にも利用される情勢なので，アマチュアといえども学名の意義を理解する必要がある。したがってこれからさき，本書のような影響力の大きい参考書の著者は，自らの判断で学名を選択し，和名で示した植物の適用範囲をはっきりさせなければならないだろう。本書の図鑑，参考書としての有用さは十分認めたうえで，将来の一般論としてこういうことを言うのをお許し願いたい。　（金井弘夫）